

OreoTerrain 6.0 Instructions

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OVERVIEW

OreoTerrain version 6.0 is the version of OreoTerrain used to create the terrain for "Nanosaur". It is called OreoTerrain because I have dog named "Oreo" so I named it after my dog, not the cookie – don't sue me please.

These instructions may seem complicated when you read through them, but the important thing to remember is that the best way to make new terrain for Nanosaur is to start with the sample files. Take the sample files and edit from them. That will be much easier than creating a brand new terrain from scratch.

Most of OreoTerrain is very intuitive even though these instructions may seem convoluted at times. This tool has been around for 5 or 6 years now and has been used in many different games for the Mac and Playstation. The user interface has been refined to what the artists over the years have wanted so it is a fairly powerful tile based map editor.

DEFINITIONS

Before getting too far into OreoTerrain, I should define a few words which I am going to use quite often:

- Tile:** A tile is a 32x32 pixel image which is used to construct the terrain. It's like building a mosaic floor out of small, identical pieces of tile.
- Tile Page:** A tile page is a PICT or TIFF file which contains up to 300 individual tiles. A tile page in OreoTerrain must be 640x480 in size.
- Tileset:** A tileset is the file which OreoTerrain saves that contains all of the information about the tiles in your terrain. This information includes the filenames of the Tile Pages you are using, any attributes assigned to the tiles, etc. The tileset file ends in a ".tileset" suffix.

Map: The map is the data which defines how the tiles are laid out. It is essentially just a 2-dimensional grid of tiles. When a map is saved it ends in “.map”.

Map Layer: There are 3 overlapping map layers. Each layer represents a different quality of the terrain. The texture layer represents the graphic look, the height layer represents the 3D extruded height on the terrain, and the path layer represents collision and special information.

Items: An item is anything placed onto the terrain which represents a game element. An item can represent a tree, enemy, the player’s starting position, etc.

TILES

TILE TYPES

As stated above, a tile is a 32x32 pixel image. There are 3 different types of tiles in this version of OreoTerrain:

1. Texture tiles
2. Heightmap tiles
3. Path tiles

Texture tiles are the artwork which are used to construct the graphic look of your terrain. These tiles are always 16-bit. In Nanosaur, for example, a grass tile is used to draw the grassy areas:



A “grass” texture tile

Heightmap tiles are described in more detail later, but these are 8-bit tiles used to describe the height of the terrain at various locations. The larger the color index value (0..255) the taller that area of the terrain will appear in the game. A heightmap tile is never seen visually in the game – it is only used to represent the height of the terrain.



This heightmap tile gradients from red to white and is used to construct a sloping surface

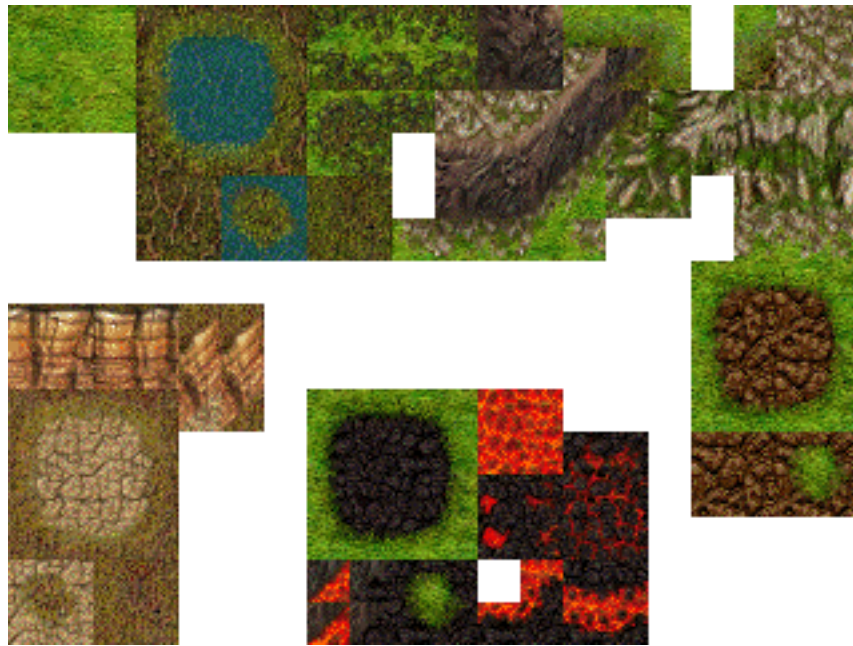
Path tiles are also never seen in the game. These tiles are used to set certain terrain parameters such as collision information, deadly areas, enemy paths, etc. The path tiles are each represented by an icon which describes its purpose. A more detailed description of these tiles is included later.



This path tile indicates that this area is "solid". Meaning that nothing can walk over this tile.

BUILDING TILE PAGES

A **tile page**, is just a PICT or TIFF file which contains up to 300 individual tiles. For example, one of the texture tile pages from Nanosaur looks like this:



One of the texture tile pages from Nanosaur

Note that multiple tiles are used to build terrain features such as grass patches, rock walls, lava, etc. There are transitional tiles to blend one area to another. Creating good tiles which don't appear to have a repeating pattern and which blend seamlessly from one material to another takes the skills of a very good artist.

OreoTerrain treats pure white tiles as blank tiles. You cannot select a pure white tile for use in your terrain.

This version of OreoTerrain for use with Nanosaur requires that you have exactly 5 tile pages:

1. 3 Texture Tile Pages
2. 1 Heightmap Tile Page
3. 1 Path Tile Page

Even if you only need one or two texture tile pages to do your terrain, you still need to load 3 texture tile pages into OreoTerrain even if two of them are blank.

To load a tilepage, simply select **Add Tile Page** from the **Tiles** menu. It will ask you to select the PICT or TIFF file to use as your tile set.

Note that the heightmap tile page should be an uncompressed 8-bit TIFF file. If you use a PICT file, your height data will get garbled a little bit. For some reason, loading an 8-bit PICT file does not necessarily give you the exact same pixel values as you originally drew. TIFF files are much more accurate and will not mangle pixel values.

Once you have loaded all of your tile page files, you should save the .tileset file so you never have to load all of those PICT's again. Simply select **Save Tile Set** from the **Tiles** menu. Next time you run OreoTerrain, you can simply select **Load Tile Set** and when you open the tileset file, your 5 tile pages will automatically be loaded.

SELECTING TILES IN A TILE PAGE

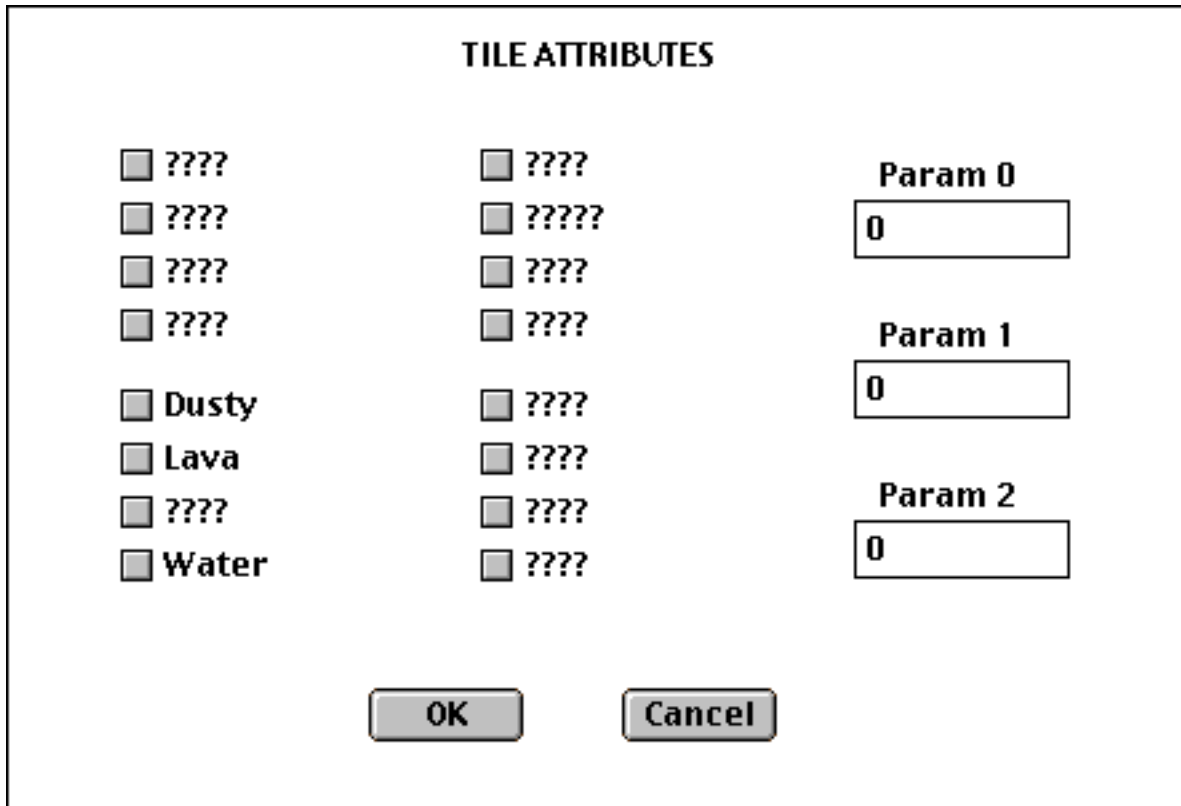
To cycle through the tile pages, click the Page Up and Page Down keys. You can select a tile or a group of tiles on the current tile page by clicking and dragging. This is the action you will perform quite often when making your terrain.



A group of tiles has been selected and is indicated by the blue outline

ASSIGNING TILE ATTRIBUTES

The first action you can do to a selected tile or group of tiles is assign **attributes** to them. When you have selected some tiles, select **Give Attributes to Tiles** from the **Tile** menu. This will bring up the Tile Attribute Dialog:



In this version of OreoTerrain, most of the attributes say “????”. Only 3 different attributes exist for Nanosaur:

1. **Dusty**
2. **Lava**
3. **Water**

Any texture tiles which fall into any of these categories should have the appropriate attribute checkbox set. This will tell the game how to behave when the player walks over these tiles: Dusty will cause dust to kick up behind the player. Lava will cause the player to get hurt and smoke to rise up. Water will only cause the player to slow down.

Do not set attribute information on heightmap tiles or path tiles. Only texture tiles can have attribute information that is meaningful to the game.

When you save the tileset file, these attributes are saved along with the tile page information.

MAPS

OreoTerrain can create terrain maps of up to 440x440 tiles. For Nanosaur, you should avoid going over 400x400 tiles in size since Nanosaur’s memory configuration was not

designed for anything over that amount. Creating maps is like building a giant mosaic picture. You are building a gigantic image from a small set of 32x32 pixel tiles.

MAP LAYERS

As described earlier, this version of OreoTerrain has 3 types of tiles: textured, heightmap, and path. There are also map “layers” in OreoTerrain: the texture layer, height layer, and path layer. Each of these layers represents certain data that the game needs. To select layer 1, 2, or 3, simply press the “1”, “2”, or “3” key.

The **texture layer** is where you draw your texture tiles. This is the layer which the player will see when they run the game.



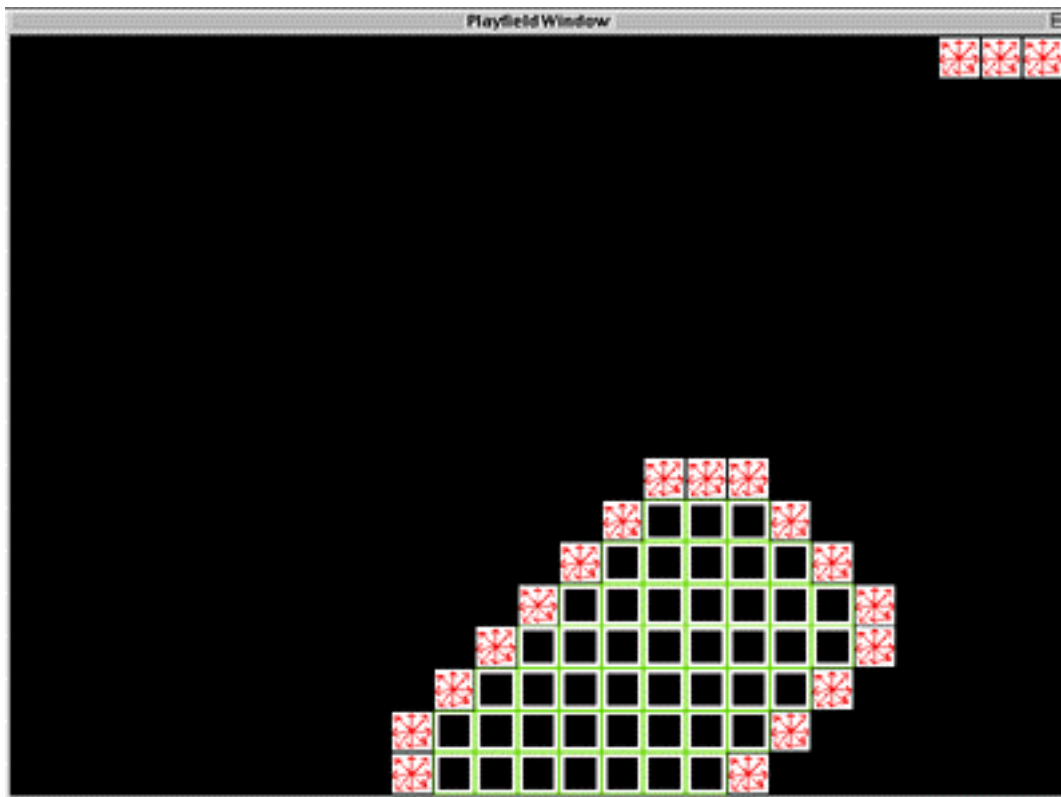
A section of the Nanosaur map. This shows the texture layer.

The **height layer** contains all of the heightmap tiles. It determines how the texture layer is “extruded” into 3D.



The same area of the Nanosaur map, but this is the height layer which describes the curvature of the terrain here.

The **path layer** is where you place the path tiles which determine where the solid areas of the terrain are and other terrain related parameters.



Once again, the same area of the Nanosaur map, but this time showing the path layer. You can see the solid areas of the map here.

To draw on any of the three map layers, first make sure you have the desired layer selected. Press the "1" key to select the texture layer, the "2" key for the height layer, and the "3" key for the path layer.

NAVIGATING THE MAP

Since the maps can be over 400x400 tiles in size, it is obviously impossible to see the entire map on the screen all at once. OreoTerrain has many navigation features for moving around the map.

SCROLLING

The most important feature is the ability to scroll. You can scroll the map in several different ways:

1. Use the arrow keys to scroll one tile at a time up, down, left, or right.
2. Press the "D" key to enter "Drag" mode. In this mode, you can simply click on the map and drag to scroll it. This is the most common and effective means of scrolling the map. To return to Brush mode, simply click "B".

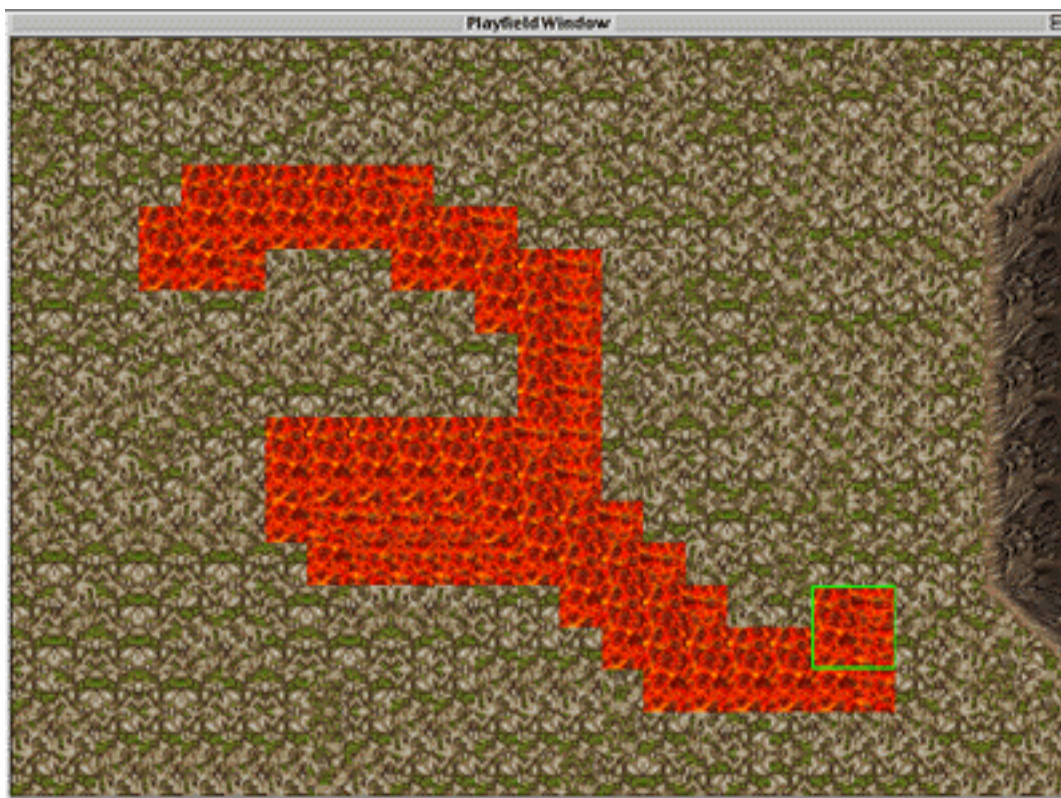
3. Position the cursor somewhere on the map and click “N”. This will cause the place on the map where the cursor was to scroll to the center of the screen. This method of scrolling is also very useful once you get used to how it works.

ZOOMING

The second important navigation ability is Zoom. You can zoom in and out of the map by pressing the “<” and “>” keys. When you are zoomed all the way out you can select rather huge tile brushes which comes in useful for duplicating large sections of map.

DRAWING WITH A TILE “BRUSH”

When you select a tile or group of tiles from a tile page, this creates a “tile brush.” When you go back to the Playfield Window and move the cursor over it, you will notice that you are moving a tile brush around the terrain. You draw onto the terrain just like using a brush in a painting program: click and drag.



A 2x2 brush of lava tiles is used to draw a lava area into the map.

To **erase** with the brush, hold down the Command key while clicking and dragging. You will also note that blank tiles (pure white as described earlier) are never plotted in the brush.

You can also select a tile brush from the existing map. Press the “C” key to go into “Copy Brush” mode. Then simply select a tile or group of tiles from the map just like you would select from a tile page. When you let go of the mouse button, you will have a new tile brush.

LOADING AND SAVING MAPS

To save your map (and I advise you save often!) simply select **Save Playfield** from the **Playfield** menu. To load a map, select **Load Playfield**. Remember that when loading an existing terrain, you have to load both its Map and Tileset files.


Also note that when you load a map, you may have to click the “1” key to go to the texture layer. OreoTerrain sometimes shows the wrong layer when it opens a map file. Just get in the habit of pressing “1” whenever you load a map.

TERRAIN ITEMS

A terrain item is a numbered icon that represents something in the game. It can represent a tree, an enemy, the player's starting position, etc. Note that sometimes "items" are referred to as "objects," but they are one and the same.

To get into item placement mode, press the 'O' key (that's the letter O, not zero). As long as you are in this mode, you will be able to edit items. Just click anywhere in the map to place a new item. When you do so, the following dialog box appears:

OBJECT TYPE DEFINITION

 Type

Parm 0 Parm 3

Parm 1 Bit 0: Nanosuar Special

Parm 2 Bit 1: ???????

Bit 2: ??????

Bit 3: ??????????

Bit 4: ??????????

Bit 5: ??????????

Bit 6: ??????????

Bit 7: ??????????

The Type field is where you enter the item type # that you wish to place down. A complete list of item types for Nanosaur can be found in a separate document. The Parm0..2 fields are used to specify sub-parameters for the item which you are placing. The Parm 3 field also specifies sub-parameters, but on a bit-level.

Items are represented on the map by colored boxes with a dot in the middle. You can set the color of an item by clicking on the "color palette" in the upper left corner of the dialog box. All further items of the same Type that you place down will have that same color until you change it again. This makes it much easier to see where say trees are when you have 4000 other things in the map.

To move an object, just click on it and drag.

To delete an object, do a Command-click on it.

To edit an object, double-click on it.

It is inevitable that your map will eventually get very cluttered with lots of objects (Nanosaur has several thousand). In some cases it may be difficult to even see what's going on. That's why OreoTerrain has a nice little item filtering feature. **Select Filter Items** from the **Playfield** menu. You will see the following dialog box:



To activate the filter, click the **Use Filter?** checkbox. The **Item # to Filter** is the item Type which you want displayed. All other items will be filtered out and not displayed. Using this feature, you can have OreoTerrain only display the rocks or only the T-Rexes, etc.

This feature can also be used to hide *all* of the objects/items. Just set Item # to a bogus value (like 32767 above) and it will filter out all of the items (because there is no such item # 32767 to display).

KEYBOARD SHORTCUTS SUMMARY

<spacebar>	-	Toggle between Map window and Tile window.
<<“ & “>>	-	Zoom in/out of the Map window.
arrows	-	Scroll 1 tile in direction in Map window.
“O”	-	Enter “Item Placement” mode.
“B”	-	Enter “Brush” mode & restore previous brush.
“D”	-	Enter Drag Mode.
“C”	-	Enter copy/cut brush mode.
Command	-	Brush erases while held down.
“N”	-	Scroll to mouse position.

THE TERRAIN MENU ITEMS

The Terrain menu has several menu items that you need to use your terrain in Nanosaur. However, be wary of the **Display View as 3D** menu item. This feature used to work, but is currently broken and will crash you Mac if you attempt it. It used to give you a 3D preview of your height-extruded terrain and it was very cool. For now, stay far away from this menu item.

The **Export Terrain File** menu item is very important. When you are ready to use your terrain file in Nanosaur, select this menu item. Exporting the terrain converts the .map and .tileset files into .ter and .trt files which are in a format that Nanosaur can use. These exported files should be named Level1.trt and Level1.ter and placed in the Nanosaur:Data:Terrain folder (replacing the existing files).

One other thing you will probably want to do is to create a new GPS overhead map for your custom terrain. The **Export Map View** menu item will create a PICT file of your terrain where each tile is represented by 1 pixel. This is the correct format that Nanosaur needs to display the GPS map. When you have saved the Map View as a PICT, open the PICT in a drawing program, copy it to the clipboard and then paste it into PICT resource #128 in the Nanosaur application.

CONCLUDING REMARKS

This document gives just a brief tutorial on making and editing terrain. Playing with the tool is the best way to learn it and like I said before, it's a really good tool once you get to know it.

There are some other menu items which I didn't cover in these docs. Some of these menu items do not do anything for Nanosaur (such as tile animation) and some menu items you'll figure out all on your own.

One final note: **SAVE AND BACKUP OFTEN**. Remember, OreoTerrain is an in-house tool and as such is not the most stable thing in the world. It hasn't crashed for me in ages, but there's no telling what it will do for you. You should save often and make backups of your terrain.

Happy terrain making!